FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET DATE: February 1999

BUDGET ACTIVITY: 2

PROGRAM ELEMENT: 0602805N
PROGRAM ELEMENT TITLE: Dual Use Science and Technology Program

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1998 ACTUAL	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	FY 2004 ESTIMATE	FY 2005 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
Dual Use Science and Technology Program	22,100*	9,977	18,390	18,126	18,222	18,304	18,692	19,091	CONT.	CONT.

* This program was allocated to Defense Advanced Research Projects Agency (DARPA) under Program Element 0603805E in FY 1997 and FY 1998. In FY 1999 the funding was transferred from DARPA and allocated equally among the three Services.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The mission of the Dual Use Science and Technology Program (DUS&T) is to prototype and demonstrate new approaches for leveraging commercial research, technology, products, and processes for military benefit. These new approaches to working with industry, many of which were prototyped at DARPA, must become common throughout the Navy in order to take full advantage of the technological dynamism of the commercial sector. While acquisition reform has helped clear the path, and experience has shown leveraging can work, it has also shown that leveraging is still unfamiliar and not widely adopted. The challenge is to spread leveraging of the commercial sector into the Navy and make it a normal way of doing business throughout the entire acquisition spectrum. Specifically, DUS&T encourages the Navy to leverage commercial research and development to improve the performance, cost and/or readiness of military systems. Under this effort, the Navy solicits, evaluates, ranks, and nominates dual use S&T projects for Dual Use S&T funds. Each project is 50% cost shared with industry. 25% is cost shared with the Navy project funds and Dual Use S&T provides the remaining 25%. All projects are awarded using either Cooperative Agreements or Other Transactions. This is essentially a learning by doing approach to Dual Use S&T in the Navy, with Dual Use S&T funds providing an incentive.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under APPLIED RESEARCH because it investigates technological advances with possible applications toward solution of specific Naval problems, short of a major development effort.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1998 ACCOMPLISHMENTS:

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- ($22,100) This program was allocated to DARPA under Program Element 0603805E in FY 1998:

  (U) Hyperspectral Remote Sensing Technology in Space - Provide dual-use, space based system for collecting broad-area Hyperspectral Imagery to characterize land and sea environments for Naval forces and commercial users.

  (U) Sensor Technology - Develop the sensor hardware, software, and system architecture needed to meet the needs and lower cost of Naval and commercial systems. Sensor technologies included are acoustic sensor arrays, electric/magnetic field sensors, seismic sensors, radiowave frequency sensors, electro-optic/infrared sensors, laser radars, sensor fusion, and location/navigation sensors.

  (U) Sustainment - Develop robust and reliable designs, parts obsolescence decision tools and simulation models, and advanced industrial sustainment practices capable of fully supporting Naval weapon and commercial system life cycle requirements. These requirements include low-cost, low volume manufacturing, shorter time to low risk production and cost-effective support; rapid quality repair and remanufacturing throughput; and increased readiness support.

  (U) Distributed Mission Training - Develop commercially available authoring tools for developing interactive, advanced distributed training which offer intelligent tutoring capabilities.

  (U) Fuel Efficiency and Advanced Propulsion Technology - Develop a modeling and simulation tool for electrical power systems, and other dynamic load characteristic power systems and to develop a monitoring and control system for distributed power systems.

  (U) Information Systems & Technology - Develop information technologies that improve the capability of both Navy command and control, and commercial communications and awareness. Areas of research include intelligent information systems, communication systems, information fusion, and collaborative environment development.

  (U) Medical Technologies - Develop, design and construct a small, portable ultrasound imaging device for advanced trauma care.

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2. (U) FY 1999 PLAN:

- (U) ($9,735) ONR issued a call to Navy activities for topics to be included in a single Joint Army, Navy, and Air Force solicitation to industry for dual use S&T proposals. Topic areas selected for FY 1999 include:

  (U) Affordable Sensor Technology - Develop the sensor hardware, software, and system architecture needed to meet the needs and lower cost of Naval and commercial systems. Sensor technologies included are acoustic sensor arrays, electric/magnetic field sensors, seismic sensors, radiowave frequency sensors, electro-optic/infrared sensors, laser radars, sensor fusion, and location/navigation sensors.

  (U) Sustainment - Develop robust and reliable designs, parts obsolescence decision tools and simulation models, and advanced industrial sustainment practices capable of fully supporting Naval weapon and commercial system life cycle requirements. These requirements include low-cost, low volume manufacturing, shorter time to low risk production and cost-effective support; rapid quality repair and remanufacturing throughput; and increased readiness support.

  (U) Distributed Mission Training - Develop network of training assets, including live, simulated and computer-generation, which allows multiple players at multiple sites to engage in complex, scalable and tailorable synthetic training environments that mirror the real, modern battlefield. Including Interconnection technology, Information technology, Representation technology, and Pervasive technologies.

  (U) Fuel Efficiency and Advanced Propulsion Technology - Develop technologies for the total propulsion system for increased and efficient speed and thrust, reduced amounts of fuel and power requited and reduced emissions. Aspects include power electronic building blocks.

  (U) Advanced High Speed Vessels and Structural Systems for Large Sea-Based Structures - This focus area addresses those requirements needed by the Navy and commercial sector to build high performance and yet affordable platforms over the life cycle. Technologies of particular interest include: high speed and excellent seakeeping vessels, structural health monitoring systems for large sea-based structures, control of large structural systems, and reliability of composite structures.

(U) Information Systems & Technology - Develop information technologies that improve the capability of both Navy command and control, and commercial communications and awareness. Areas of research include intelligent information systems, communication systems, information fusion, and collaborative environment development.

- (U) ($242) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. (U) FY 2000 PLAN:

- (U) ($18,390) ONR issued a call to Navy activities in November 1998 for FY 2000 and 2001 topics to be included in a single Joint Army, Navy, and Air Force solicitation to industry for dual use S&T proposals. Selected topics will address Navy needs identified in the Science and Technology Requirements Guide and Navy projects will be expected to provide at least 25% of the total proposed effort with industry providing at least 50%. The FY 2000/2001 solicitation will be issued in January 1999. Selections will be made beginning July 1999 and agreements for FY 2000 will be awarded in October 1999. Topic areas include:

  (U) Affordable Sensor Technology - Develop the sensor hardware, software, and system architecture needed to meet the needs and lower cost of Naval and commercial systems. Sensor technologies included are acoustic sensor arrays, electric/magnetic field sensors, seismic sensors, radiowave frequency sensors, electro-optic/infrared sensors, laser radars, sensor fusion, and location/navigation sensors.

  (U) Sustainment - Develop robust and reliable designs, parts obsolescence decision tools and simulation models, and advanced industrial sustainment practices capable of fully supporting Naval weapon and commercial system life cycle requirements. These requirements include low-cost, low volume manufacturing, shorter time to low risk production and cost-effective support; rapid quality repair and remanufacturing throughput; and increased readiness support.

  (U) Distributed Mission Training - Develop network of training assets, including live, simulated and computer-generation, which allows multiple players at multiple sites to engage in complex, scalable and tailorable synthetic training environments that mirror the real, modern battlefield. Including Interconnection technology, Information technology, Representation technology, and Pervasive technologies.

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(U) Fuel Efficiency and Advanced Propulsion Technology - Develop technologies for the total propulsion system for increased and efficient speed and thrust, reduced amounts of fuel and power required and reduced emissions. Aspects include power electronic building blocks, turbine engine propulsion, aircraft power distribution and storage.

(U) High Speed Ships - Conceptualize, analyze, and demonstrate the feasibility of high speed ships for both commercial and military transport. The broad goals at full scale are: speeds in excess of 70 knots, ranges in excess of 6,000 miles, payload (cargo) in excess of 5,000 tons, shallow draft for small port entry, offloading under adverse weather conditions, and reasonable power requirements.

(U) Information Systems & Technology - Develop information technologies that improve the capability of both Navy command and control, and commercial communications and awareness. Areas of research include intelligent information systems, communication systems, information fusion, and collaborative environment development.

(U) Bioengineering and Medical Technologies - Develop technologies to improve areas of Automatic Pattern Recognition-Neural model-based sensor/processor networks for dynamic scene assessment, target detection/classification, and machinery fault diagnosis and Biorobotics-Biomimetic, Autonomous Vehicles and Mobile Robots.

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B. (U) PROGRAM CHANGE SUMMARY:

	FY 1998	FY 1999	FY 2000
(U) FY 1999 President's Budget:	0	20,000	18,700
(U) Appropriated Value:	0	-	-
(U) Adjustments from FY 1999 PRESBUDG:	0	-10,023	-310
(U) FY 2000 PRESBUDG Submission:	0	9,977	18,390

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: Reductions in FY 1999 due to FY99 Program Decrease (-10,000) and Revised Economic Assumption (-23). FY 2000 adjustments due to Outsourcing Adjustment (-44) and Non Pay Inflation (-266).

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: Not applicable.

(U) RELATED RDT&E:
(U) PE 0602805A (Dual Use Applications Program)
(U) PE 0602805F (Dual Use Applications Program)

D. (U) SCHEDULE PROFILE: Not applicable.